Escher Stairs

Recently, Lea went to an art exhibition with many interesting pictures. She especially liked one part of the exhibition that dealt with non-euclidean geometry, for example buildings that can not be built in the real world. A famous example of this is "Relativity" by M. C. Escher.

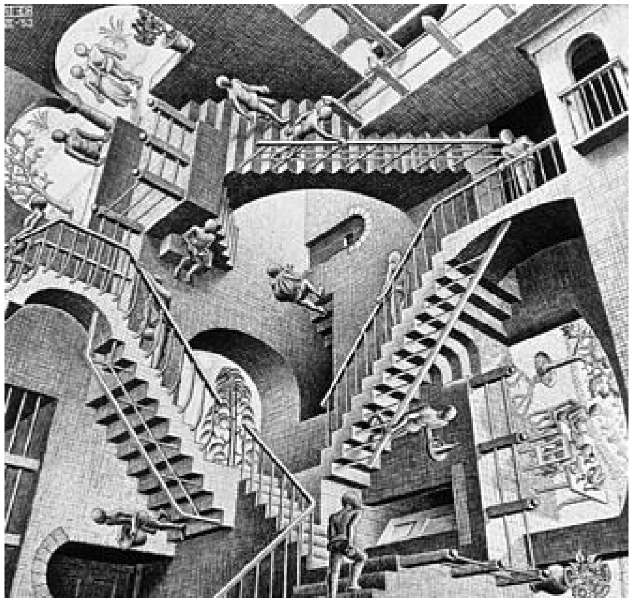

Figure 1: Relativity, by M. C. Escher. Lithograph, 1953. Source: Official M.C. Escher website (http://www.mcescher.com/).

There, Lea found many pictures of buildings with stairs. For fun, she tried to imagine if this particular building could be built in the real world. She checked this by counting the amount of steps of every flight of stairs, positive for going up, negative for going down. Then she chose a random starting point and tried to get back to the same point. If she could find a sequence of stairs that led her back where the amount of steps did not equal 0, she could be sure that the building could not be built (assuming all steps are of equal height). Otherwise, Lea is certain that some genius architect will find a way to construct such a building.

Lea easily got lost in the picture while counting. Can you tell her if the building could be real?

Input

The first line of the input contains an integer t. t test cases follow.

Each test case begins with a line containing three integers n m s, where n is the amount of places (indexed from 1 to n), m is the amount of connecting flights of stairs and s is the point Lea chose to start in. m lines follow. The i-th line consists of three integers a_i, b_i, c_i separated by spaces, meaning that there is a flight of stairs from place a_i to b_i with c_i steps. All flights of stairs can be used in both directions, but are only given going upward, i.e. to go from a_i to b_i you would go c_i steps up, and to go from b_i to a_i you would go c_i steps down.

Output

For each test case, print a line containing "Case #i: possible" if there is no path from s to s such that the sum of steps is different from 0. Otherwise, print "Case #i: k", where k is a minimal number of flights of stairs Lea can take that lead her back to s with a step-sum different from 0. This number should correspond exactly to the path she took, so if she takes the same flight of stairs more than once, it is also counted again.

Constraints

- $1 \le t \le 20$
- $1 \le s \le n \le 2000$
- $0 \le m \le 10^5$
- $1 \le a_i, b_i \le n$ for all $1 \le i \le m$
- $0 \le c_i \le 5000$ for all $1 \le i \le m$
- The graph is connected.

Sample Input 1

```
6
3 3 1
1 2 1
2 3 1
1 3 2

4 5 2
1 2 1
2 3 1
3 4 1
1 3 2
1 4 2

4 3 1
1 4 4
1 2 4
3 4 9

4 6 1
4 1 1
1 3 0
1 2 0
4 1 1
2 3 1
4 4 1

4 4 1
4 1 8
4 2 1
2 3 1
4 1 7

3 5 1
1 2 2
1 3 3
1 3 3
2 2 1
1 3 4
```

Sample Output 1

```
Case #1: possible
Case #2: 4
Case #3: possible
Case #4: 3
Case #5: 2
Case #6: 2
```

Sample Input 2

```
8
5 8 3
1 4 0
4 3 0
3 2 4
1 5 2
2 2 0
4 5 1
3 2 3
5 2 1

5 5 2
3 1 4
3 2 1
2 4 4
3 5 4
2 5 2

4 6 1
1 2 4
4 2 4
3 1 3
3 4 3
1 1 1
3 2 8

4 5 1
1 3 7
2 3 3
4 2 3
1 1 0
4 3 6

3 3 3
1 2 4
3 2 3
3 2 2

3 3 1
1 3 8
1 2 6
1 2 7

5 7 4
4 1 1
4 3 0
4 2 0
5 1 6
2 2 0
5 5 0
3 1 2

3 5 1
3 1 6
3 2 0
2 3 0
3 3 0
2 2 1
```

Sample Output 2

```
Case #1: 2
Case #2: 3
Case #3: 1
Case #4: possible
Case #5: 2
Case #6: 2
Case #7: 3
Case #8: 5
```